

Benton County Wildfire Protection Plan

Phase 1 ***Hazard/Risk Assessment***

Prepared by the Benton County Wildfire Protection Plan Steering Group

May 2005

Benton County Wildfire Protection Plan

Acknowledgement

The Benton County Community Wildfire Plan Steering Group has completed Phase 1 of the Benton County Wildfire Plan. It is anticipated by the Steering Group preparing this plan that the agencies listed below will continue to support development of Phase 2, Preparedness and Response. The agencies listed below are encouraged to adopt this plan and appoint a member to a steering group to prepare Phase 2 and to administer future activities carried out under this plan.

Concurred By:

Benton County Board of Commissioners	Benton County Fire District 5
BCES Executive Board	Benton County Fire District 6
City of Benton City	Hanford Fire Department
City of Kennewick	Benton County Noxious Weed Board
City of Richland	United States Department of Interior United States Fish and Wildlife Service Hanford Reach National Monument
City of West Richland	United States Department of Interior Bureau of Land Management Spokane District Office
Benton County Fire District 1	United States Department of Energy Richland Operations
Benton County Fire District 2	United States Department of Agriculture Natural Resources Conservation Services
Benton County Fire District 3/Prosser	United States Department of Interior United States Fish and Wildlife Service Mid-Columbia National Wildlife Refuge Complex
Benton County Fire District 4	

Benton County Wildfire Protection Plan

Approved By:

Washington State Department of Natural
Resources, State Forester
Patrick McElroy

The Benton County Wildfire Protection Plan must integrate with other Benton County documents and plans. Therefore, it is a compilation of original text, excerpts from other Benton County documents and hazard mitigation plans, as well as other local, state, and federal documents and plans. The BCWPP then becomes a unique, stand alone plan for mitigating specific fire hazards within the county.

Benton County Wildfire Protection Plan

Table of Contents

1.0	Introduction.....	6
1.1	Background and History.....	6
2.0	BCWPP Development and Integration	8
2.1	Goals and Objectives:.....	8
2.2	Requirements.....	8
2.3	Methodology	9
2.4	Development of a County Wildfire Protection Plan (CWPP)	10
3.0	Specific Details of Benton County	10
3.1	Topography, Environment, and Natural Resources	10
3.2	County and Community Profiles, Populations, Demographics, and Socio-Economic Data	12
3.3	Fire Districts and Unprotected Areas	12
3.4	History of Fire Occurrences/Community Impacts.....	12
3.5	Conclusion	15
3.6	Pertinent Legislation/Requirements/Local Governmental Stipulations.....	16
3.7	Description of Partners, Committees, and Community Fire Committee	17
4.0	Planning Process.....	18
4.1	Population Projections for Benton County	18
4.2	Estimated Lands Needed To Accommodate Rural Population Growth.....	18
4.3	Projected Growth of New Residents in the Rural Areas.....	19
4.4	New Housing Units Needed for Projected Rural Population Growth.....	19
4.5	Land Needed for Projected New Rural Population Housing Needs	19
5.0	Risk Assessment	20
5.1	Expectations and Considerations.....	20
5.1.1	General.....	20
5.1.2	Specific Considerations for Benton County.....	21
5.2	Fire Risk Assessment Methodology	21
5.2.1	Establish a Community Base Map	21
5.3	Fire Risk Assessment	21
5.3.1	Fire Behavior Factors	22
5.3.2	Weather Assessment	22
5.3.2.1	Wildland Fuels Assessment	22

Benton County Wildfire Protection Plan

5.3.2.2	Topography Assessment.....	23
5.3.3	Fire Suppression Capability Assessment.....	24
5.3.4	Fire Occurrence Assessment.....	25
5.3.5	Evaluation Process.....	26
5.4	5.4 Prioritization of Areas based on potential economic loss	26
6.0	Benton County Emergency Management (BCEM)	28
6.1	General Information	28
6.2	Benton County Emergency Management Command.....	28
7.0	Benton County Emergency Management Operations	30
7.1	General	30
7.2	Benton County Emergency Management Roles and Responsibilities	32
7.2.1	Benton County Emergency Management Fire Response Roles and Responsibilities	32
7.2.2	Benton County Emergency Management Recovery Roles and Responsibilities	33
7.3	Fire District Protection Capabilities	33
7.3.1	Wildfire Suppression Procedures.....	33
7.3.2	Community Notifications.....	33
8.0	Fire Mitigation Plans	34
8.1	Development of the Benton County Hazard Mitigation Plan (BCHMP)	34
8.1.1	General Information.....	34
8.1.2	Establish Community Priorities.....	36
8.2	BCWPP Development Strategies.....	36
8.3	Specific Wildfire Mitigation Goals.....	36
8.4	Public Involvement.....	39
9.0	Needs and Recommendations for Ongoing Mitigation Activities	43
9.1	Limiting Fire Occurrences	43
9.2	Local Programs.....	44
9.3	State Programs	46
9.4	Federal Programs	46
9.5	Federal Emergency Management Agency (FEMA) Programs	46
9.6	Fire Suppression Assistance Grants.....	47
9.7	National Wildland/Urban Interface Fire Protection Program	47
10.0	Review/Approval/Concurrence	47

Appendix A. *List of Stakeholders*

Appendix B. *Maps*

Benton County Wildfire Protection Plan

Appendix C. *Letter from Chairman of the Benton County Board of Commissioners*

Appendix D. *Weather Data Analysis*

Appendix E. *Fire Risk Rating*

Appendix F. *Adjective Hazard/Risk Ratings Across Benton County*

Benton County Wildfire Protection Plan

List of Terms

AHJ	authority having jurisdiction
ALE	Arid Lands Ecology Reserve
BCCEMP	Benton County Comprehensive Emergency Management Plan
BCEM	Benton County Emergency Management
BCES	Benton County Emergency Services
BCHMP	Benton County Hazard Mitigation Plan
BCWPP	Benton County Wildfire Protection Plan
BI	burning index
BLM	Bureau of Land Management
CEO	Chief elected official
CERCLA	Comprehensive Environmental Resource Compensation and Liability Act
CGS	Columbia Generating Station
CRP	Conservation Reserve Program
CWPP	county wildfire protection plan
DMA	Disaster Mitigation Act
DNR	Washington State Department of Natural Resources
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
EMD	Emergency Management Division
EMT	emergency medical technician
EOC	Emergency operations center
ERC	Energy Release Component
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System

Benton County Wildfire Protection Plan

List of Terms (continued)

HFRA	Healthy Forests Restoration Act
IMT	Incident Management Team
NFPA	National Fire Protection Agency
POC	point-of-contact
RAWS	Remote Automated Weathers Stations
RCFP	Rural Community Fire Protection
RCW	Revised Code of Washington
RFPC	Rural Fire Prevention and Control
RL	U.S. Department of Energy, Richland Operations Office
UMCD	Umatilla Chemical Depot
USFA	U.S. Fire Administration
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WGA	Western Governors' Association
WUI	Wildland Urban Interface

Benton County Wildfire Protection Plan

List of Tables

Table 1, *Wildland Fire Cause Classes*

Table 2, *Size Class*

Table 3, *Water Availability*

Table 4, *Fuel Bed Mapping*

Table 5, *Slope Mapping Classes*

Table 6a, *Nearest Fire Station Class*

Table 6b, *Water Availability Rating*

Table 6c, *Access Limitations Rating*

Table 7, *Fire Occurrence Rating*

Table 8, *Values of Risk Classification*

Table 9, *Adjective Hazard/Risk Ratings*

Table 10, *Wildfire Action Items of the BCWPP (currently being worked)*

Table E.1, *District #1 Risk Rating Scores*

Table E.2, *District #2 Risk Rating Scores*

Table E.3, *District #3 Risk Rating Scores*

Table E.4, *District #4 Risk Rating Scores*

Table E.5, *District #5 Risk Rating Scores*

Table E.6, *District #6 Risk Rating Scores*

Table E.7, *Richland Fire District Risk Rating Scores*

Table E.8, *Kennewick Fire District Risk Rating Scores*

Table E.9, *Fish and Wildlife District Risk Rating Scores*

Table E.10, *Total Priority List*

Benton County Wildfire Protection Plan

List of Figures

Figure 1, *Benton County*

Figure 2, *Benton County Fire Occurrence Summary*

Figures B.1 *Territorial Fuels Maps:*

- Figure B.1a. Benton County FD #1
- Figure B.1b. Benton County FD #2
- Figure B.1c. Benton County FD #3
- Figure B.1d. Benton County FD #4
- Figure B.1e. Benton County FD #5
- Figure B.1f. Benton County FD #6
- Figure B.1g. Hanford FD
- Figure B.1h. Hanford Reach Monument
- Figure B.1i. Kennewick FD
- Figure B.1j. Richland FD

Figures B.2 *Territorial Slope Maps:*

- Figure B.2a. Benton County FD #1
- Figure B.2b. Benton County FD #2
- Figure B.2c. Benton County FD #3
- Figure B.2d. Benton County FD #4
- Figure B.2e. Benton County FD #5
- Figure B.2f. Benton County FD #6
- Figure B.2g. Hanford FD
- Figure B.2h. Hanford Reach Monument
- Figure B.2i. Kennewick FD
- Figure B.2j. Richland FD

Figures B.3 *Territorial Fire Occurrence Maps:*

- Figure B.3a. Benton County FD #1
- Figure B.3b. Benton County FD #2
- Figure B.3c. Benton County FD #3
- Figure B.3d. Benton County FD #4
- NOTE: Benton County FD #5 has not provided this data
- Figure B.3e. Benton County FD #6
- Figure B.3f. Hanford FD
- Figure B.3g. Hanford Reach Monument
- Figure B.3h. Kennewick FD
- Figure B.3i. Richland FD

Benton County Wildfire Protection Plan

Executive Summary

The Benton County Wildfire Protection Plan (BCWPP) was developed in response to recommendations by the 2004 Western Governor's Council, and those recommendations coming from several investigative teams following the Command 24 Fire of 2000.

In order to help mitigate the impact of large wildland fires, Benton County and neighboring counties and agencies must better coordinate emergency response, emergency communication, and emergency equipment. In addition, Benton County must better mitigate the fire hazards around the county.

A common plan (BCWPP), shared among the various shareholders is required to deal with the following elements: command structure, training, community notification, public safety, and mutual assistance agreements.

In order to satisfy these requirements, Benton County has done extensive study on the fire hazards and risks within the county; mapped the most dangerous and difficult areas; developed equipment/hardware inventories; established command structures; and increased crew training.

The BCWPP documents and integrates these activities, but also provides an additional program plan, i.e., a hazard mitigation plan that involves both county officials and agencies, but also directly involves the public. This plan is the basis for application for federal funding to support this mitigation effort. This project was funded by a National Fire Plan Community Assistance and Wildland Urban-Interface Grant through the U.S. Fish and Wildlife Service.

Benton County Wildfire Protection Plan

1.0 Introduction

1.1 Background and History

The 24 Command Fire began on Tuesday, June 27, 2000, as a direct result of a fatal auto accident on Washington State Route 24. It burned approximately 163,834 acres of federal, state, and private lands by July 1, 2000. Over 7,000 people were asked to evacuate from Benton City and West Richland, and 25 homes and structures were burned.

The land in the area is managed as the Fitzner-Eberhardt Arid Lands Ecology Reserve (ALE) by the U.S. Fish and Wildlife Service (USFWS), jointly with the U.S. Department of Energy (DOE), which still holds title to the land. The ALE is a 120 square mile portion of the newly designated Hanford Reach National Monument, which encompasses 200,000 acres.

None of the federal wildland fire agencies, including the USFWS and BLM have 'let burn' policies – indeed, they never have. All wildland fires receive an Appropriate Management Response, based on:

- -risks to firefighters and the public
- -land and resource management objectives
- -weather and fuel conditions
- -threats and values to be protected
- -cost efficiencies

Appropriate Management Response options include:

- -monitor from distance
- -monitor on site
- -confinement
- -monitoring with mitigation and/or contingency actions
- -initial attack
- -large fire suppression with multiple strategies
- -control and extinguishment

The fire spread rapidly over the first two days due to high prevailing winds, high temperatures, low fuel moisture, and low humidity. It burned a significant amount of shrub-steppe habitat on the ALE portion of the monument.

Benton County Wildfire Protection Plan

As a fire increases in complexity, incident management teams (IMT) are assigned based on the team's level of qualifications and experience. After escaping initial attack efforts led by a Type 4 team, the Refuge Deputy Project Leader assigned a Type 3 IMT. As the fire continued to escalate, Type 2, then Type 1 IMT unified commands were established.

The fire ultimately involved more than 900 personnel from multiple agencies. Committed resources involved 129 engines, 7 helicopters, 3 air tankers, 4 bulldozers, 18 water tenders, 206 "overhead" positions, and 12 crews.

Several investigations/reviews were conducted by the various stakeholders including Benton County officials, the USFWS, the Bureau of Land Management (BLM), and the U.S. Department of Energy, Richland Operations Office (RL). These investigations evaluated both the response to the fire and the actions taken prior to the fire to manage the wildfire. A brief discussion of the stakeholder evaluations are provided below.

The first stakeholder review was conducted by the USFWS Interagency Fire Team which included members from the USFWS, BLM, DOE, Spokane Fire District 10, and Kennewick Fire Department. This team evaluated the following several categories during their review:

- Safety
- Initial Attack
- Extended Attack
- Resource Ordering/Dispatch Operations
- Inter-agency Coordination
- Training/Qualification
- Engine Burn Over/Fire entrapment/Investigation
- Wildland Fire Situation Analysis/Delegation of Authority/Agency

The second stakeholder review was lead by the RL during which the Type-B Investigation Team evaluated causes of the event and identified actions/recommendations needed to prevent recurrence. The following areas were evaluated during the Type-B Investigation:

- Existing emergency response processes
- Review and revise site-wide and protracted emergency and recovery operations, including emergency communications and resource readiness
- Assess the Federal Radiological Emergency response plan
- Improve the corrective action management system.

Benton County Wildfire Protection Plan

Both evaluations resulted in constructive recommendations to improve the overall process to proactively manage potential fire hazards and respond to events. An agreement was reached between the various stakeholders that there was a significant need for improvement and identified the need for an integrated Benton County Wildfire Protection Plan (BCWPP).

This document describes the BCWPP along with the goals/objectives set by local agencies; methodology used to develop the integrated plan; methodology and results of the hazard risk assessment; and the detailed mitigation plan and strategy for Benton County

2.0 BCWPP Development and Integration

2.1 Goals and Objectives:

The primary goal of the BCWPP is to ensure the protection of people, including emergency personnel, from injury or loss of life. The second goal is to minimize property loss from wildland fire.

2.2 Requirements

The BCWPP responds to a set of requirements developed from the following sources:

1. Preparing a Community Wildfire Protection Plan: A handbook for Wildland-Urban Interface communities, March 2004. This guideline/requirement document on wildland fires was a directed outcome of the Western Governor's 2004 conference.
2. National Fire Protection Act. (NFPA 1144), *Standard for Protection of Life and Property from Wildfire*
3. Benton County Emergency Services Executive Board Letter of Instruction: RE: The Benton County Wildfire Protection Plan, October 18, 2004.

It should be noted that a county wildfire protection plan (CWPP) is legally applicable to federal lands only if they are managed by the United States Forest Service (USFS) or the BLM. However, the USFWS is not legally bound by the provisions of the Healthy Forests Restoration Act (HFRA), of which the CWPP is the local instrument. This does not preclude USFWS from assisting with planning.

The final set of requirements used in the development of this plan were tailored using the provisions of the guidance document mentioned above to ensure that those requirements were applicable and relevant to Benton County.

Benton County Wildfire Protection Plan

2.3 Methodology

In addition to consideration of requirements to build a plan, this plan was collaboratively developed by points-of-contact (POC) from local and state government representatives. Benton County consulted with the USFWS, BLM, DOE, and other interested stakeholders/organizations. Appendix A list of stakeholders that provided representation from the groups, organizations, and agencies:

A core team of representatives was developed from the original stakeholders and consisted of local Authorities Having Jurisdiction (AHJ[s]), local governments, federal, and state agencies. The core team focused on areas brought out in the investigations and fire analysis.

Initial discussions centered around the following three controllable issues:

1. Identification and prioritization of areas for hazardous fuels reduction.
2. Types of treatments and methods of treatments that will protect one or more at-risk communities and essential infrastructure.
3. Actions that homeowners and communities can take to reduce or mitigate the ignitability of structures.

Any recommendations identified by the core team also considered an in-depth analysis of three major factors of concern around the county:

1. Location, type and concentration of fuels throughout the county, particularly in Wildland Urban Interface (WUI) areas.
2. Slope of the WUI areas.
3. Access to all county areas

NOTE: A WUI, as described in HFRA, Section 101 (16)) is the “(i) area extending 1/2 mile from the boundary of an at-risk community; (ii) an area within 1.5 miles of the boundary of an at-risk community, including any land that (I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community; (II) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or (III) is in condition class 3, as documented by the Secretary in the Project-specific environmental analysis; (iii) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuels reduction to provide safer evacuation from the at-risk community.

Benton County Wildfire Protection Plan

Therefore, the BCWPP is based on the analysis of information in reports, investigations, and historical technical data. The AHJ is determined by the jurisdiction having authority at the ignition point of the fire. Those several entities are responsible for the adoption and maintenance of this multi-agency operational plan for the protection of lives and property.

2.4 Development of a County Wildfire Protection Plan (CWPP)

The final step in the methodology was the actual writing of the plan where each of the following elements were addressed:

1. Command ([Section 6.2](#))
2. Training ([Section 6.1](#))
3. Community notification and involvement ([Section 7.3.2](#))
4. Public Safety ([Section 7.3.2](#))
5. Mutual Assistance Agreements ([Section 6.2](#), [Section 7.2.1](#), and [Section 7.3.1](#))
6. Evacuation Plans. ([Section 7.3.2](#))

Each element is addressed in the plan in an appropriate section.

3.0 Specific Details of Benton County

3.1 Topography, Environment, and Natural Resources

The county covers 1712 square miles, and is bordered on the north, east, and south by the Columbia River. Agricultural land and arid lands of Yakima County and Klickitat Counties establish the northwest and southwest borders. The Yakima River also flows through portions of the county. Figure 1 provides an overview of Benton County....

Any given area of land within the county will have physical and biological features such as slopes, soil types, hydrology, geologic structure/stability, wind, and sun exposure.

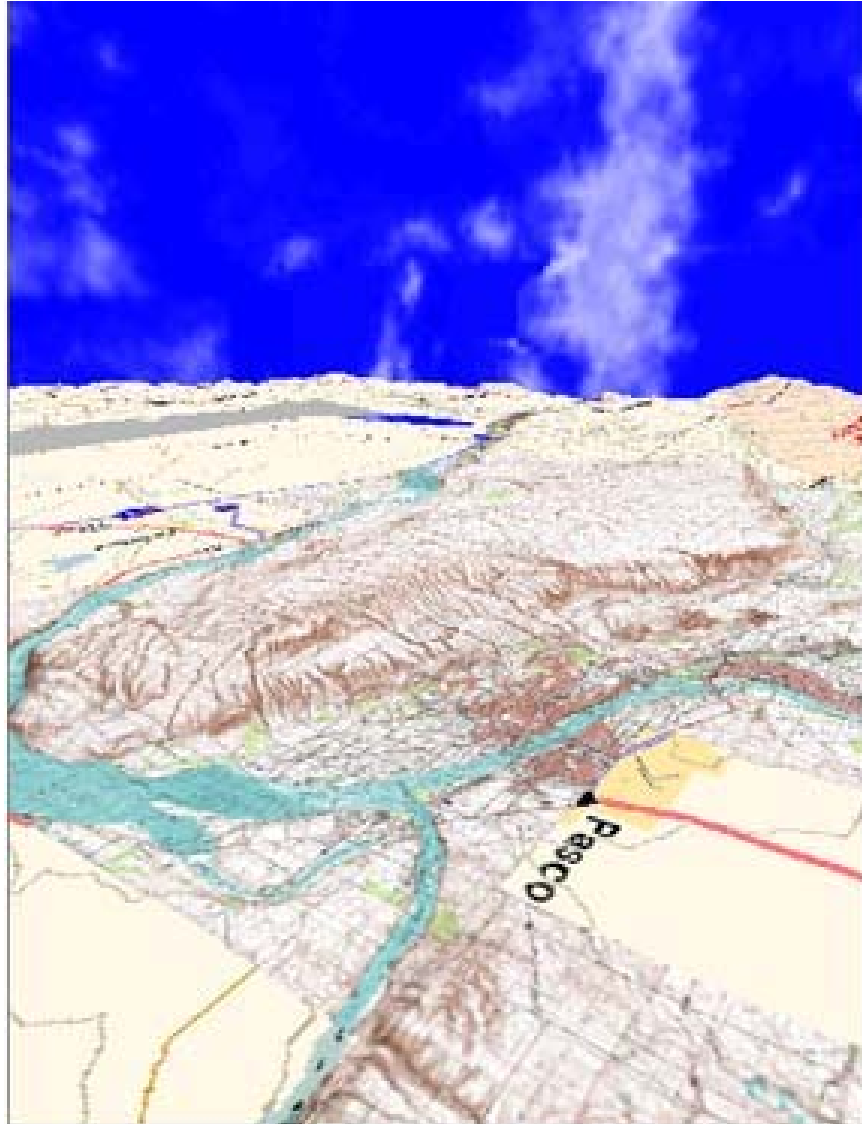
The present geologic landscape includes the Hanford Basin, productive soils on the flanks of anticlinal ridges, the Horse Heaven plateau, water resources of three major rivers, and the vertical columns and plugs of basaltic outcrops.

A thin layer of vegetation has adapted to the area's geologic base. The layer is relatively sparse and fragile on the dry uplands of shrub-steppe and bunch grasses, but diverse and resilient along its reaches of river, tributaries, and creeks.

Benton County has a mild climate, and is situated at the confluence of three major rivers (Columbia, Snake, and Yakima), with productive soils, and easily malleable land.

Benton County Wildfire Protection Plan

Figure 1. Overview of Benton County



The county ranges in elevation from 700 to 3200 feet, with Rattlesnake Mountain the highest point. Most of the area is covered with rapidly combustible grasses, noxious weeds, and sage brush. Most elevated areas (hills, rolling plains) are cut by impassable ravines from top to bottom or crevices, gulleys, and ditches which present the most difficult conditions for combating fire once established. In outlying districts, farms and ranches have large fenced off areas or orchards which also inhibit access.

3.2 County and Community Profiles, Populations, Demographics, and Socio-Economic Data

Benton County is home to 142,155 (2004 Office of Financial Management (OFM) projection) residents, living in 5 incorporated cities, and 4 other communities. A diverse economic base includes agriculture, environmental clean-up, power generation, nuclear materials handling, and support industries, manufacturing, recreational and retirement facilities, and retail trade.

3.3 Fire Districts and Unprotected Areas

Fire services are the responsibility of the individual city departments or Fire Protection Districts. There are mutual aid agreements between all cities and the six fire districts extending throughout Benton County, as well as agreements with surrounding counties.

The Richland, Kennewick, Pasco, and Hanford fire departments and Benton County Fire Districts 1 through 6, plus the USFWS, and BLM are member agencies whose capabilities are employed and coordinated under the Tri-County Agreement. Within Benton County, there are areas that are not served by a fire department or protection district.

3.4 History of Fire Occurrences/Community Impacts

This section discusses the fire occurrence inputs to the Benton County Community Fire Plan Risk Assessment. Appendix B provides the Territorial Fuel, Slope, and Fire Occurrence Maps used and evaluated in preparation of this document. Inputs include fire behavior factors, fire protection capabilities and limitations, and historic fire occurrence patterns.

Fire occurrence data were collected from the various units participating in the Community Fire Plan project. Due to a lack of a common reporting format, much of the data had to be extracted by hand or generated from local recollection. As a result, the data period was limited to five years (1999-2003). For each fire that involved burning of natural vegetation, the following data elements were collected:

- The protecting agency
- Date of discovery
- Time of discovery
- General cause using the standard nine wildland fire cause classes
- Final fire size in acres

Benton County Wildfire Protection Plan

- Location by latitude and longitude

The above information was entered into a spreadsheet that allowed for various sorting, analysis, and display options. Table 1 provides the nine wildland fire cause classes and corresponding code. Table 2 identifies the size class for the final size of the fire in acres.

Table 1. Wildland Fire Cause Classes

Cause	Code
Natural causes	1
Equipment or vehicles	2
Smoking	3
Campfires (open/outdoor fires)	4
Debris/or vegetation burning	5
Structure fire resulting in a wildland fire	6
Arson/incendiary	7
Children/misuse of fire	8
Miscellaneous/other	9

Benton County Wildfire Protection Plan

Table 2. Size Class:

Size in Acres	Size Class
0 -¼	A
¼ - 9.9	B
10 - 99	C
100 - 299	D
300 - 999	E
1000-4999	F
5000+	G

The data were also entered into a geographic information system (GIS) database that allowed for a graphic display of the fire locations.

Appendix B illustrates the fire occurrences for Benton County plus those in BLM, USFWS, and DOE's Hanford Site. McNary National Wildlife Refuge is included as some of the occurrence data for the Umatilla National Wildlife Refuge is included in the McNary data record.

Over the five year data period, Benton County experienced nearly 1200 wildland fires or approximately 240 per year. The majority (965 or 83%) of the fire starts burn less than 10 acres. The total acreage burned varies significantly from year to year, but averages around 13,000 acres if you discount the Command 24 event in 2000. The area experiences, on average, about 14 fires over 100 acres in size per year.

The majority of the fires were caused by humans. Lightning accounted for only 61, or 5%, of the fire starts during the five year data period.

Breaking down the human-caused fires by general cause is impossible at this time due to the lack of consistency in the way these data elements have been reported in the past and the fact that many fires were listed as having an unknown cause. What can be determined, however, from the plotted fire locations is that numerous fire starts are associated with the highway and rail network within the county and within the urbanized areas of the county.

Benton County Wildfire Protection Plan

Typically, human-caused fires can be classified into three general groups despite where they occur as follow:

1. Incendiary or those intentionally set to do damage.
Incendiary or arson fires are always a concern and do occur, but they don't account for a very large portion of the total fire starts.
2. Accidental fires such as those that result from burning vehicles and vehicle accidents, railroad operations, down power lines, grain harvest activities, etc., are frequent but tend to occur along the transportation corridors and are generally accessible.
3. Careless Use fires are by far the most frequent cause of wildland fires within the county. This group includes back yard debris burning, fireworks, careless smoking, campfires, children playing with fire, and small scale agricultural burning such as ditch burning.

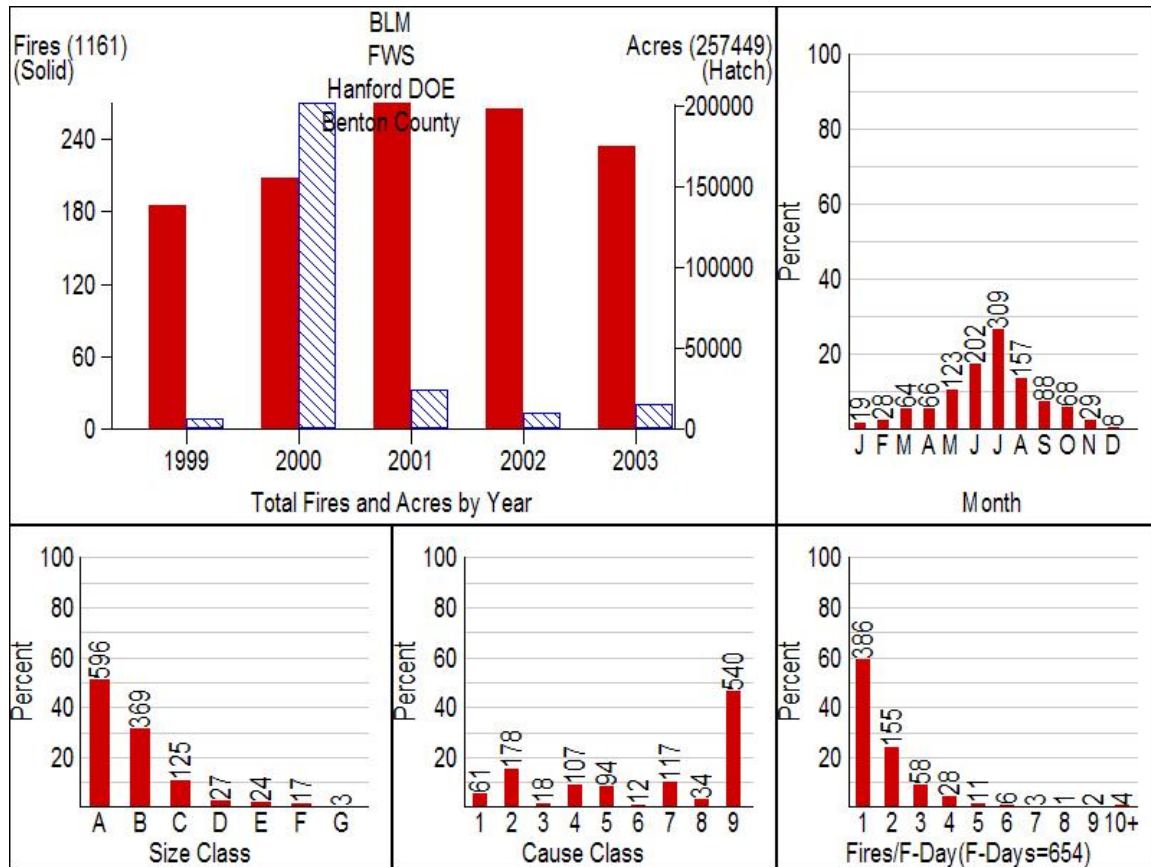
3.5 Conclusion

Benton County has a significant wildland fire problem that results in periodic loss of residences and other structures. The majority of the fires are human caused and in most cases preventable. Fire activity starts in the spring and peaks in early July though scattered fires occur almost year long. On about 40% of the days that there are fires, there are multiple fires. There have been four instances in the past five years when there were over 10 fires occurring on a single day.

Benton County Wildfire Protection Plan

Figure 2 illustrates basic information about the wildland fire occurrence within the county.

Figure 2. Benton County Fire Occurrence Summary



3.6 Pertinent Legislation/Requirements/Local Governmental Stipulations

The county has had an ordinance in place since 2004 that limit when property owners can burn debris and have open fires. It also restricts agricultural burning under certain conditions.

Local zoning development ordinances detail the setback, coverage, depth, and structure height requirements to provide fire safety and protection of all structures. The International Residential Code and International Building Code, as well as additional local jurisdiction codes documents further fire resistant standards in regard to roofing. Municipal building inspectors are responsible for enforcing these criteria in single-family residential structures. Fire districts work with the appropriate county and/or city building department to ensure safety in commercial structures.

Benton County Wildfire Protection Plan

The National Wildfire Coordinating Group's (NWCG) Fireline Handbook, and the [Interagency Standards for Fire and Aviation Operations](#) are interagency documents that describe suppression tactics and strategies, and are generally good wildland fire reference documents.

3.7 Description of Partners, Committees, and Community Fire Committee

Benton County is somewhat unique within the guidelines of the NFPA. A DOE nuclear reservation/Comprehensive Environmental Resource Compensation and Liability Act (CERCLA) environmental clean up site exists, which encompasses 560 square miles (about 1/3 of the county) of territory, much of which is restricted area due to security or environmental concerns. In addition, the Columbia Generating Station, (a nuclear power plant) and the Umatilla Chemical Depot (a war chemical disposal plant) are within the county or border the county.

A further challenge to achieving a coordinated plan is the number of cities, wildlife preserves, governmental agencies, and bordering counties with the similar fuel, slope, access, and resource complications.

However, there are mutual aid and operating agreements with the BLM, the USFWS, and the major municipalities and fire departments within the county.

Benton County Wildfire Protection Plan

4.0 Planning Process

It is recognized that involving the public and other stakeholders is extremely important in any planning process. This section provides an overview of the methodology used and key steps to ensure that the integrated BCWPP had input from key stakeholders and users. There is more detailed information on public involvement in [Section 8.0](#) of this document.

A key attribute of the planning process included the collection of required data and public information notifications.

1. Collaboration with Social Services, Agency Stakeholders; Identify partners and collect data.

Many supporting resources such as social service agencies, local media, law enforcement, were contacted and their input gathered. Some highlights/concerns expressed by these partners were obtained from regular meetings with such entities as school districts and/or medical facilities.

2. Community Outreach meetings with the public

Strong public input and concerns were solicited in community outreach meetings.

3. Review of community studies and reports regarding city or community

Planning Departments documents on land use, housing and development trends, transportation, and infrastructure, were reviewed.

The following excerpts are from the current "BENTON COUNTY COMPREHENSIVE PLAN" (originally written in 1998, and updated in 2004).

4.1 Population Projections for Benton County

The latest population projections from OFM, using the "median" series estimates, indicate that Benton County can expect a population increase of 43,588 over the next 20 years. This will result in a year 2016 population of 174,352, which is an increase of 33% over the population of 131,000 presented in the plan.

4.2 Estimated Lands Needed To Accommodate Rural Population Growth

Approximately 25% of the total county population, or 33,280 people (1995 OFM), reside in the unincorporated area of Benton County. The number of rural residents in 1995 shows an increase of 5% since 1990.

Benton County Wildfire Protection Plan

4.3 Projected Growth of New Residents in the Rural Areas

Based upon historical growth rates within the unincorporated area, it is estimated that from 8,670 to 10,838 additional people (20-25% of the projected population growth countywide) will seek housing in unincorporated areas of the county between now and the year 2016.

This growth represents a 26-32% increase over the current rural population. Should this growth materialize, the rural population would be from 42,000 to 44,000 people, roughly equal to the City of Kennewick in 1996. A rural population of 44,000 people in year 2016 would maintain the current rural population as 25% of the projected county-wide total.

4.4 New Housing Units Needed for Projected Rural Population Growth

At an estimated 3.0 persons per household, an increase of 8,670 to 10,838 people in rural Benton County would require up to 3251 new homes in the next 10-20 years.

The "Rural Lands" designations (i.e., lands outside of urban growth areas and the Agricultural District), are sufficient to accommodate 18,078 additional dwelling units, or more than (5) times the projected rural demand. If the additional densities that can be achieved in the Agricultural District are added to those within the Rural lands, 56,847 new dwelling units could be built. This number exceeds the projected demands by 17 times.

4.5 Land Needed for Projected New Rural Population Housing Needs

There are currently 80,070 acres designated and available for new Rural Residential density within the four Rural Planning Areas of Benton County (outside of Hanford and the agricultural district).

As a means of estimating land needs for the 3251 new projected households: if one third of the need were satisfied on lands with 1 acre density, one third by lands with 5 acre density, and one third by 2.5 acres, an additional 9,212 acres would be needed. This is approximately 12% of the available land supply within the rural designations. It is 1.2% of the rural and agricultural lands base combined.

The population and housing growth in the county will certainly stretch the current fire fighting resources of each fire district in the county. Fire fighting infrastructure will have to also expand.

5.0 Risk Assessment

This section details the key steps used in evaluation of the wildfire risks of Benton County along with the governing expectations and consideration outlined by the stakeholders.

5.1 Expectations and Considerations

5.1.1 General

This Risk Assessment followed the general guidelines found in the publication Preparing a Community Wildfire Protection Plan: A handbook for Wildland-Urban Interface Communities, March 2004 that lays out significant considerations to include when building a plan. These include:

1. Values at Risk
2. Social
3. Economic
4. Ecological
5. Fire Hazard
 - a. Weather
 - b. Fuels
 - c. Topography
6. Fire Risk (Fire Occurrence)
7. Structural Vulnerability
8. Infrastructure/Resources to respond at the WUI
 - a. Fire Suppression Capabilities
 - b. Fire Districts, Stations, Hardware and Personnel

Further considerations on what to consider in the risk assessment were provided in a letter from the Chairman of the Benton County Board of Commissioners that outlined their concerns and priorities relative to wildland fire risks in the county. A copy of this letter is provided in Appendix C.

5.1.2 Specific Considerations for Benton County

It was necessary to modify some of the protocols outlined in the above “handbook” to make the procedures fit some of the unique characteristics of Benton County. These included development of the following:

1. Local fuel type mapping standard
2. More simplified slope (topography) mapping standard, and
3. Set of criteria for rating infrastructure limitations that affected resource availability in the WUI.

5.2 Fire Risk Assessment Methodology

The Benton County Wildfire Protection Plan Fire Risk Assessment is a broad scale rating of the relative potential for significant property losses due to uncontrolled wildfire. Factors considered that contribute to the risk or probability of loss due to wildfire includes:

- Expected fire behavior,
- Existing fire suppression capabilities, and
- Likelihood of fire starts.

When prioritizing or ranking individual areas relative to their risk, consideration of value was also included.

5.2.1 Establish a Community Base Map

The first step was to work with partners to establish an electronic base map of the county that included basic infrastructure and fire protection agency boundaries. All subsequent mapping was done on this base map. Benton County Emergency Management personnel completed this task.

5.3 Fire Risk Assessment

As stated above fire, risk rating is a combination of expected fire behavior factors, existing fire suppression capabilities, and the likelihood of fire starts. The second step in the risk assessment process was to identify and map each of these factors.

Benton County Wildfire Protection Plan

5.3.1 Fire Behavior Factors

Traditionally, in fire suppression, fire behavior is calculated as a real time occurrence using site-specific observations of weather, fuels, and topography as inputs. (From these inputs, algorithms determine flame length, rate of spread, fire intensity, etc., that control the effectiveness of suppression tactics.) These same elements were considered in evaluating the fire behavior factors that affected the overall risk ratings.

5.3.2 Weather Assessment

Based on an analysis of daily weather observations from several weather stations within and adjacent to Benton County, it was determined that weather factors that affect fire behavior (temperature, relative humidity, and wind speed) were generally uniform across the county on any given day. As a result of this finding, weather was considered to be a uniform factor and, therefore, not considered when evaluating potential daily fire behavior differences across the county. Appendix D contains the data analysis evaluated during the weather assessment.

5.3.2.1 Wildland Fuels Assessment

Wildland fuels are typically described in terms of broad fuel models reflecting the varying amounts of live and dead fuels present. In Benton County, the majority of the wildland area would be classified as a grass fuel bed with varying amounts of sagebrush and like species present. Some of the steep canyons and gullies contained dense thickets of Russian Olive and tall bush species. A portion of the county is irrigated lands such as orchards, vineyards, alfalfa fields, or other cultivated lands such as wheat fields, for which there are no standard fuel models that describe the vegetation type.

Recognizing that this is a broad scale evaluation, it was necessary to not only identify where the hazardous fuels were located but also to identify where the relatively fire safe areas were also located, as they often restrict the fire size and direction spread. As a result, a four-class fuels classification mapping system was developed for use in this plan.

In assigning relative rating weights to these fuel classes as they affect the overall risk of an area, it was felt that the brush areas should be rated the highest as they have the potential to produce the highest fire intensity and pose the most difficulty to control. Though there is not much difference in potential fire intensity between grasslands and the non-irrigated lands in terms of fire behavior, it was felt that the grasslands posed a slightly higher risk than the agricultural lands because of a season long exposure of accumulated dead fuels. (For example, wheat lands are cultivated each year and start

Benton County Wildfire Protection Plan

over with bare soil each season.) Irrigated lands are considered non-flammable; therefore, the fuels would not be a contributing factor to fire behavior.

The classes used are listed from highest to lowest expected fire intensity and rating weights assigned accordingly.

Table 4. Fuel Bed Mapping

Class	Rating Weight
Heavy Brush—Sagebrush, Russian Olive, etc. (Fire Behavior Fuel Models 2 or 6)	5
Natural Grass—Cheat or bunch grasslands/CRP lands (Fire Behavior Fuel Model 1)	3
Non-irrigated agricultural lands/dry land grain fields, etc (No Fire Behavior Fuel Model covers this type)	2
Non-flammable lands/irrigated agricultural lands/yards, etc (No Fire Behavior Fuel Model covers this type)	0

Fire chiefs used local knowledge of their jurisdictions to produce a broad scale fuels map using the four classifications described above. This information was prepared as an overlay to the base map. Appendix B (Figures B.2a. through B.2j.) illustrates the territorial fuel maps.

5.3.2.2 Topography Assessment

Topographical variation across the county produces significant differences in potential fire spread rates on any given day under similar weather conditions. Spread rates control suppression tactics and resource utilization. The flatter the ground, the more effective ground-based fire suppression resources are. Where direct attack is possible, fire suppression forces have a good chance of containing a fire start before it has a chance of becoming a damaging wildfire. Engines are effective in direct attack on ground up to about 20% slope. Dozers can work on ground up to 30%. On ground over 30%, tactics shift from direct to indirect which often involves dropping back to a road or area of flatter ground to make a stand, potentially sacrificing large areas where it is unsafe to work.

A computer generated map depicting three general slope categories was developed from United States Geological Survey (USGS) topographic data and displayed on the

Benton County Wildfire Protection Plan

base map. Each class was given a numeric rating weight. Table 5 provides the slope mapping classes used and associated rating weight. They recognize where wheeled vehicles could be used effectively, where dozers were the only option for direct attack, and where indirect attack was the likely attack alternative.

Table 5. Slope Mapping Classes

Percent Slope	Risk Rating Weight
Over 30% (Limits of direct attack)	5
20-30% (Limits of dozer use)	3
0-20% (Limits of wheeled attack)	1

5.3.3 Fire Suppression Capability Assessment

Fire suppression capability is best rated by evaluating an area relative to its proximity to staffed fire stations, availability of water supplies, and limits to fire apparatus access including road width and grade, bridge limitations, terrain features, etc.

Fire chiefs used the local knowledge of their district and the following scale to rate each of these elements on a township by township basis. These data were recorded in a spreadsheet.

Table 6. Nearest Fire Station Class

Suppression Resource Location	Rating Weight
Not in any organized fire protection district	5
More than 15 minutes from a station	4
11-15 minutes from a station	3
6-10 minutes from a station	2
5 minutes or less from a station	1

Benton County Wildfire Protection Plan

Table 7. Water Availability Rating

Water Availability	Rating Weight
No Water available within 15 minute drive	5
No pressurized system-water available within 15 minutes	3
Pressurized system available-does not meet current code	2
Pressurized system-meets current codes	0

Table 8. Access Limitations Rating

Access Limitations	Rating Weight
Apparatus access is limited by road grade, width and bridge load limits	5
Apparatus access is limited by terrain features such as gullies and draws	3
No features limiting apparatus access	0

Each of the three elements used to assess suppression capability are weighted equally when determining the overall rating of fire suppression capability.

5.3.4 Fire Occurrence Assessment

As previously stated in Section 3.5, Benton County experiences a large number of wildland fires each year. The likelihood of a fire occurring in a particular area is a significant consideration when evaluating the potential of an area to suffer significant damage from wildland fire. Exposure to fire starting events cannot be predicted with any degree of accuracy. As a result, the best method to evaluate this input element is to look at past fire occurrence.

Fire records for the period 1999-2003 were entered into a database and plotted on the base map. The fire occurrence is not uniformly distributed across the county.

Benton County Wildfire Protection Plan

Historic fire occurrence, as an indicator of the probability that an area would have an ignition source, was scaled using the four adjective classes below and assigned a rating weight.

Table 9. Fire Occurrence Rating

Fire Occurrence Frequency	Rating Weight
Very High—More than 20 fires per township over the 5 year period	5
High—Between 10 and 20 fires per township over the 5 year period	3
Moderate—Between 3 and 10 fires per township over the 5 year period	2
Low—Less than 3 fires per township over the 5 year period	1

5.3.5 Evaluation Process

Using the various maps and local knowledge, fire chiefs evaluated each of the elements of fire risk on a township-by-township basis using the criteria and rating scale outlined in Tables 4 through 7 above. The result of this process produced a numeric score for each township that reflected the relative potential for that area to experience a loss from wildfire. The higher the total rating score, the greater the potential for the specific area to experience a loss due to wildfire. A summary of the fire risk rating scores developed by this process is included as Appendix E.

5.4 5.4 Prioritization of Areas based on potential economic loss

In order to prioritize the individual areas for applying mitigation measures or other work, it was necessary to consider the consequences should a fire actually occur. To accomplish this step, a value function was applied to the risk rating for each area being evaluated. Because this was a broad scale analysis, adjective ratings of value based on development density were used rather than actual property values. Table 8 describes the criteria used to assign values and the rating weight for each.

Benton County Wildfire Protection Plan

Table 8. Values at Risk Classification

Description of Area Being Rated	Rating Weight
Urban-high density improvements. More than five residences per acre with normal landscaping.	5
Suburban—Medium density improvements. One to five residences per acre.	4
Suburban—Low density improvements. One to five acre residential lots prevail in the area	3
Rural—Individual residences on five acre parcels or larger	2
Open Space—Less than one improvement or structure per square mile	1

The risk rating scores and value at risk ratings were combined into a single numeric score that reflects relative ranking of an area based on the potential losses expected from uncontrolled wildfire. These scores are displayed in Appendix E.

Because this was a broad scale analysis using some very generalized criteria and mapping standards, it was best to group areas based on the rating score into general categories rather than considering them as individual entities. The following criteria were used to group the individual areas into four levels of hazard risk ratings.

Table 9. Adjective Hazard/Risk Ratings

Rating Score	Adjective Hazard/Risk Rating
Top 25% of the areas	Very High risk of significant loss due to wildland fire
Second 25% of the areas	High risk of significant loss due to wildland fire
Third 25% of the areas	Moderate risk of significant loss due to wildland fire
Bottom 25 % of the areas	Low risk of significant loss due to wildland fire

Appendix F displays the distribution of the various Adjective Hazard/Risk Ratings across the county.

Benton County Wildfire Protection Plan

6.0 Benton County Emergency Management (BCEM)

6.1 General Information

Incident command systems (developed in accordance with NFPA 1561, *Standard on Emergency Services Incident Management System* (10.2.1.3)) exist throughout the county.

The AHJ is contingent upon understood boundaries.

Mutual Aid agreements exist not only for one AHJ to elicit near-by help, but also in order to clarify the roles and responsibilities when there is no clear distinction of what entity actually is the AHJ.

Training, qualifications, and equipment requirements demand that all personnel and equipment assigned to a wildland fire incident be able to carry out assignments in a predictable, safe, cooperative, and effective manner. Training must be appropriate for national, state, provincial, or local certification where required.

6.2 Benton County Emergency Management Command

The Benton County Comprehensive Emergency Management Plan (BCCEMP) contains Emergency Support Function (ESF) sections that display and document the purpose, scope, roles, and responsibilities for agencies. ESF- 4 of this plan pertains to firefighting.

The primary agency and its support agencies are as follows:

Primary Agency	Tri-County Board This name comes from the Mutual Aid Agreements
Support Agencies	Benton County Emergency Management (BCEM) Richland Fire Department Kennewick Fire Department Pasco Fire Department Hanford Fire Department Benton County Fire Protection District #1 Benton County Fire Protection District #2 Benton County Fire Protection District #3 Benton County Fire Protection District #4 Benton County Fire Protection District #5 Benton County Fire Protection District #6 Southeast Communications Center (SE-COMM) Prosser Dispatch Washington State Patrol

Benton County Wildfire Protection Plan

The purpose of ESF-4 is to provide for fire suppression, and coordinated use of fire department and district resources for control of fires and other responsibilities.

In time of disaster, the fire service will be called upon to perform a wide range of functions including, but not limited to, on-scene command of fire suppression activities, on-scene control of hazardous material incidents, damage-assessment reporting, on-scene emergency medical assistance, and liaison with other fire service agencies.

Benton County fire departments and districts have mutual aid plans and agreements with other districts and departments. Such assistance is provided wherever emergency situations warrant additional personnel and when such requests do not detract from the capability to provide adequate fire protection within their respective jurisdictions. Requests for mutual aid will be made in conformance with procedures established in the Tri-Cities Mutual Aid Plan, the Southeast Region Fire Mobilization Plan, and the Washington State Fire Mobilization Plan.

Organization/Infrastructure: (This structure and the roles and responsibilities listed below are consistent with both the BCCEMP and the Benton County Hazard Mitigation Plan (BCHMP).

Tri-County Board: The Tri-County Board represents Benton, Franklin, and western Walla Walla counties and serves to unite their respective firefighting resources under the Mutual Aid Plan.

Firefighting Representative to the Emergency Operations Center (EOC): This representative serves as the interface between the Emergency Management Organization and the firefighting resources.

BCEM: Benton County Emergency Management (BCEM) is responsible to support planning and coordination for this ESF. BCEM consists of a Director, EM Division Manager, and staff planners. One staff planner position will be identified as coordinator for the firefighting function.

Member Fire Departments: The Richland, Kennewick, Pasco, and Hanford fire departments and Benton County Fire Districts 1 through 6 are member firefighting agencies whose capabilities are employed and coordinated under the Aid agreement.

SE-COMM: SE-COMM is an inter-local Agency formed by Benton County and the cities of Kennewick and Richland to provide emergency dispatch (911) service. It is under the direction of a general manager, who reports to the designated head of the inter-local Agency, Benton County Emergency Services.

Benton County Wildfire Protection Plan

Prosser Dispatch: Prosser Dispatch is staffed and operated by the Prosser Police Department. The police dispatcher reports to the Prosser Chief of Police.

7.0 Benton County Emergency Management Operations

7.1 General

The BCCEMP provides for a command/control structure for emergency response, and outlines the County's management structure for emergency response. The BCEM is charged with the responsibility for coordination of the planning and response effort, and the efficient utilization of all resources available in the county.

BCEM operates from a designated facility at 651 Truman Avenue, Richland, Washington, 99352. During an emergency, this Emergency Operations Center (EOC) can serve as the command and control center for governmental operations. The EOC is equipped with a diesel generator capable of continuous use for 14 days. In addition, the EOC is equipped with information display materials, internal communications, and additional supporting equipment, materials, and supplies required to ensure efficient operations and effective emergency management 24 hours a day.

When an emergency situation occurs anywhere within the limits of Benton County, normal emergency response units will be dispatched to the scene. Most emergencies are handled locally by these emergency responders. Response by fire department personnel shall be directed by the fire chief in the jurisdiction where the incident occurs, utilizing the nationally recognized Incident Command System. Emergency services provided by fire departments and fire districts will be requested on a mission basis to allow for continuity of operations consistent with their procedures and policies.

If the emergency exceeds or appears likely to exceed the resources available through normal response and mutual aid, or if additional support is needed, the Incident Commander (or Chief Elected Official (CEO) of the municipality) will ask that BCEM be notified. BCEM will, upon request, either partially or fully activate the EOC and/or provide Emergency Management assistance at the request of the Incident Commander (IC). Direction and control of emergency management functions is the responsibility of the CEO of the municipality or municipalities involved. The Mayor (or in the absence of a Mayor, the next in line for leadership succession) is considered to be the CEO. The CEO will act as Emergency Chairman, or the authority may be delegated by this official.

In the case of unincorporated areas of Benton County, the Chairman of the County Commission will act as the Emergency Chairman. In the absence of the Chairman, any available County Commissioner may act as Emergency Chairman.

Benton County Wildfire Protection Plan

In the case that more than one municipality is involved or threatened, the Chairman of the County Commission and the Mayor of the municipality involved (or his/her designee) will act jointly in the capacity of Emergency Chairman.

Direction and control of emergency management functions is the responsibility of the CEO of the municipality or municipalities involved. The CEO will act as Emergency Chairman.

An IC will be responsible for operations at the scene of an emergency.

The EOC will coordinate with the IC who is at the scene of the emergency. Overall coordination and control of the county-wide response will be under the management of the Emergency Chairman and his/her Emergency Operations Staff.

The EOC staff may include, but is not limited to:

- Emergency Chairman
- Benton County Emergency Management Staff
- Law Enforcement Coordinator
- Fire Services Coordinator
- Emergency Medical Services Coordinator
- Manager of Emergency Dispatch Center
- Health Department Coordinator
- American Red Cross Representative
- Transportation Coordinator
- Agriculture Department representative
- State Emergency Management Division liaison
- Public Information Officer
- Support personnel

Benton County Wildfire Protection Plan

7.2 Benton County Emergency Management Roles and Responsibilities

BCEM will assist fire departments in preparing procedures for emergency operations, and provide training in special hazards that threaten Benton County when appropriate.

City fire departments and county districts will designate an EOC representative, provide BCEM with updated resource lists, and assist in development of emergency public information texts to be used in disaster related incidents.

BCEM will coordinate with fire departments in providing emergency public information during emergencies and disasters, and will conduct exercises with fire departments to ensure knowledge of disaster plans and methods of damage assessment reporting.

BCEM and the fire departments will work with the appropriate agencies to identify potential fire hazards and help mitigate them. BCEM and the fire departments will also work with other public agencies to identify activities (installed fire breaks, green belts, etc.) that can be performed by the general public.

7.2.1 Benton County Emergency Management Fire Response Roles and Responsibilities

BCEM will activate the EOC, issue warnings, notify appropriate agencies of emergency situations as necessary, and coordinate, as requested, resource needs during any incident.

BCEM will activate the Emergency Alert System (EAS) as necessary, and coordinate with fire service public information officers in dissemination of emergency public information.

The Washington State Patrol will assume the lead regarding hazardous material incidents unless a local fire department or district has accepted incident command responsibilities.

Response of fire services will be dependent on the type and severity of the disaster. Response functions could range from small scale fire suppression and control to incidents affecting large sections of the population.

If it appears that existing resources are inadequate (exclusive of mutual aid), BCEM will assist, as requested, in procuring necessary resources through the Southeast Region and Washington State Fire Mobilization Plans.

Benton County Wildfire Protection Plan

7.2.2 Benton County Emergency Management Recovery Roles and Responsibilities

BCEM will provide support for recovery operations, i.e., public information, welfare agency assistance, interagency coordination.

City fire departments and county districts will continue priority recovery and survival operations, and continue providing damage assessment reports, as necessary.

7.3 Fire District Protection Capabilities

Fire protection capabilities are summarized in the Tri-County Mutual Aid Agreement. The following information is captured in appendices to that document as follows:

Appendix 1. *Agency Radio Identifiers*

Appendix 2. *Equipment and Facility Standards*

Appendix 3. *Pre-Determined Out of Area Strike Teams/Leaders*

Appendix 4. *Apparatus Inventory*

Appendix 5. *Communications Inventory*

7.3.1 Wildfire Suppression Procedures

See Tri-County Mutual Aid Agreement mentioned above. Some other suppression tactics are “MIST.” MIST is the acronym for Minimum Impact Suppression Tactics. The intent is to suppress a wildland fire with the least impact to the land. Fire conditions and good judgment dictate which actions might be taken to successfully control the fire without undue damage to cultural and natural resources, or increasing risk to firefighters or the public. Some MIST tactics which can be effective in local fuel types:

- -using natural barriers
- -cold-trailing line
- -using minimum width firelines and burning out
- -using handlines where sufficient
- -using tractor & disk instead of dozer

7.3.2 Community Notifications

The establishment of a communication system to provide rapid and accurate information to the public regarding wildland fire incidents that endanger their community, including detailed instructions for public notification of impending evacuation, is required. Also, security measures are needed to protect evacuated area. Therefore,

Benton County Wildfire Protection Plan

community notifications are carried out by local radio and television stations that carry the Emergency Broadcast Systems and CSEP. The Benton County Sheriff has jurisdiction over evacuations, and local police authorities are to secure evacuated property. It is interesting to note that no Washington State citizen can be forced to evacuate or abandon his property in the event of an emergency. Citizens are allowed to remain in place and defend their property in the event of a disaster.

8.0 Fire Mitigation Plans

8.1 Development of the Benton County Hazard Mitigation Plan (BCHMP)

8.1.1 General Information

The BCHMP is the parent document and the basis for the Benton County Wildfire Protection Plan (BCWPP). The BCWPP relies heavily on the BCHMP and is complimentary and supplemental and not in conflict with the BCHMP.

The BCHMP has been, and will be, directed by the BCHMP Steering Committee, composed of the Executive Board of Benton County Emergency Services. The Steering Committee has appointed a Planning Committee, composed of representatives of the municipalities and other stakeholders, to oversee formulation and maintenance of the BCHMP, and to coordinate action items between the involved municipalities. Benton County Emergency Services (BCES) is the agency tasked with supporting the Planning Committee in developing and maintaining the BCHMP.

As a result, this BCHMP has been officially adopted by the Benton County Commissioners, and by the City Councils of Benton City, Kennewick, Prosser, Richland, and West Richland. Specifically, each municipality has adopted Section 1 of the BCHMP and that Section setting forth their municipality's specific Hazard Mitigation Action Plan, as shown in Table ES-1 of that plan. The BCHMP has been approved by the Federal Emergency Management Agency (FEMA) and by the Washington Military Department, Emergency Management Division (EMD).

The BCHMP documents the planning process, presents the hazard characterization/vulnerability analyses and mitigation strategies resulting from that process, and establishes an approach for continuing the hazard mitigation planning process into the future.

In the case of the BCWPP and to ensure the most effective use of their limited resources, the municipalities of Benton County have focused their initial hazard

Benton County Wildfire Protection Plan

characterization on vulnerability analyses for wildfire, and based community priorities on that analyses.

Benton County Wildfire Protection Plan

8.1.2 Establish Community Priorities

The BCHMP was created to protect the health, safety, and economic interests of Benton County residents by reducing the risk of natural and technological (e.g., man-made) fire hazards. The plan provides a path toward continuous, proactive identification and reduction of vulnerability to the most frequent fire hazards that result in repetitive and often severe social, economic, and physical damage.

This BCHMP was established to fulfill federal, state, and local hazard mitigation planning requirements. The Disaster Mitigation Act of 2000 (DMA 2000), Section 322 (a-d) requires local governments to have an approved local mitigation plan in accordance with 44 CFR 201.6.

The Benton County Fire Chiefs, the USFWS, BLM, and DOE participated heavily in the development of the BCHMP, especially Section 4 on fires.

The municipalities of Benton County have multi-jurisdictional mitigation action items to be implemented jointly by all of the municipalities.

The development of the BCWPP's fire hazard mitigation activities are based on the information gathered for the BCHMP. Many mitigation activities for both plans are the same, however, the BCWPP's will be used to apply for additional grant programs to fund specific fire mitigation actions.

8.2 BCWPP Development Strategies

This Wildfire Protection Plan is a specific extension of the BCHMP.

8.3 Specific Wildfire Mitigation Goals

Based on the listed priorities, the municipalities of Benton County have established seven broad fire hazard mitigation goals consistent with the BCHMP to provide direction for their fire hazard mitigation planning and their implementation of mitigation measures. These goals clearly indicate priority projects are directly related to protection of communities, essential infrastructure, and to other community values.

GOAL No. 1. PROTECTION OF LIFE AND PROPERTY: Reduce impacts from fire hazards on residents, individual properties, businesses, and public facilities and infrastructure by encouraging activities that can prevent/reduce damage.

GOAL No. 2. EDUCATION AND OUTREACH: Enhance public awareness and understanding of fire hazards and potential fire risks, including economic vulnerability and mitigation measures.

Benton County Wildfire Protection Plan

GOAL No. 3. PREVENTIVE PLANNING: Reduce the risk from fire hazards to human health and safety and property by developing/enhancing mitigation planning and programming in our communities.

GOAL No. 4. PARTNERSHIP AND COORDINATION: Develop partnerships and coordination between all stakeholders in fire hazard mitigation planning and implementation.

GOAL No. 5. STRUCTURAL AND NON-STRUCTURAL MITIGATION MEASURES: When applicable, utilize structural and/or non-structural mitigation measures to reduce risks associated with fire hazards.

GOAL No. 6. NATURAL RESOURCE PROTECTION: Preserve and enhance natural systems to serve as natural fire hazard mitigation functions.

GOAL No. 7. EMERGENCY SERVICES: Enhance life safety protection by promoting, strengthening, and coordinating emergency response planning and response capabilities.

The goals indicate the plans, programs, and fire hazard mitigation measures the municipalities of Benton County will use to implement the BCHMP and BCWPP. They are focused on areas of fire hazard mitigation activities that are within the authority and responsibility of the municipalities of Benton County.

The Plan contains action items to mitigate the effects of the priority fire hazards. The identification of specific action items to provide fire hazard mitigation is limited to those items considered to be practical, cost-effective, and efficient at reducing the risk for those areas with high vulnerability. Where practical, action items are identified that address multiple fire hazards. In identifying and prioritizing action items, the municipalities of Benton County have emphasized measures that mitigate the fire hazard before it occurs. However, the municipalities of Benton County recognize, for some fire hazards, enhancing response and recovery actions may be the most effective means at their level to reduce the impacts of the fire hazard. Implementation of some action items will be dependent upon available resources and/or the cooperation of other public and private stakeholders.

Benton County Wildfire Protection Plan

These action items generally fall into the following categories:

- Removal of existing development within the area of hazard.
- Restricting future development within the area of hazard.
- Providing a structural defense against the impacts of the hazard.
- Providing a non-structural defense against the impacts of the hazard.
- Providing hazard mitigation education to the affected communities.
- Ensuring that plans, procedures, facilities, equipment, and trained personnel are available to provide for adequate response and recovery.

Implementation of the action items adopted by each municipality will reduce injuries, loss of life, and destruction of property due to the fire hazard(s) addressed. Some of the action items have the added benefit of providing mitigation for multiple hazards; such action items are generally considered to be of higher priority for implementation.

Table 10 identifies the specific wildfire actions

Table 10. Benton County Hazard Mitigation Plan*

Action Items	Problem Solved	Priority	Municipality
Work with county to control weeds and brush in areas adjacent to city.	Accumulation of fuels increases hazard.	Medium	Benton City
Develop mitigation approach in coordination with fire districts and County	Wildfires typically originate outside City	High	Kennewick
Repair Hildebrand Road	Provides emergency access to Thompson Hill area	High	Kennewick
Obtain additional equipment to address fires in difficult terrain.	Fires in hills not accessible by current equipment.	High	Prosser
Work with county to restrict low-density development in wildland/urban interface.	Development in interface increases exposure.	Medium	Prosser
Develop a program of fire prevention inspections during peak fire hazard days.	Public lacks awareness of hazard	High	Benton County
Develop and enforce a program to control weeds and brush in the wildland/urban interface areas.	Public lacks awareness of the hazard.	Medium	Benton County
Develop and implement (e.g., continue and expand current efforts) a wildfire prevention/education program.	Many homeowners have done very little to manage or offset fire hazards on their property.	High	All

Benton County Wildfire Protection Plan

8.4 Public Involvement

Public involvement is a key component of community strategic fire hazard mitigation planning processes. It offers citizens the chance to voice their ideas, interests, and opinions. Washington's Growth Management Act addresses the need for public participation in local comprehensive planning activities (RCW 36.70a 140). FEMA also requires public input during the development of hazard mitigation plans.

The approach used to develop the BCHMP, and thereby the BCWPP, was designed to maximize opportunities for broad public involvement in order to provide an integrated cross-section of stakeholder input throughout the planning process. To accomplish this goal, an aggressive public involvement program was developed at the onset of the planning process.

The public involvement program consisted of five main components:

1. Identifying a project Steering Committee comprised of representatives from the county and the cities within Benton County.
2. Forming a Planning Committee made up of people who are knowledgeable about the county and the various communities within it.
3. Holding a series of public meetings and workshops with Benton County citizens and agency stakeholders to identify common, as well as specific concerns, and to discuss priorities and potential mitigation actions.
4. Conducting stakeholder interviews to garner the specialized knowledge of individuals working with populations or areas at risk from the three natural hazards – flood, wildfires, and windstorms – evaluated as part of this stage of Benton County's natural hazard mitigation planning process.
5. Community events to increase the exposure of the hazard mitigation planning process to the general public and solicit input and feedback.

Efforts to involve the community in the development of a fire hazard mitigation plan are critical to both the credibility and the effectiveness of the plan. Community involvement leads to a more complete identification of fire hazards, development of reasonable mitigation alternatives, and the identification of issues that must be addressed to obtain the public's support of the plan.

A general community-wide workshop was held at the Richland City Shops to provide an opportunity for Benton County's citizens to learn about the Benton County hazard mitigation planning process and to gain community members' input. Planners sought public input on the fire hazards being addressed in the BCHMP and BCWPP and other natural and technological hazards that will be included in future updates of the BCWPP,

Benton County Wildfire Protection Plan

as well as to receive public input regarding potential mitigation activities. The workshop was advertised through several means, including:

- Public announcements were sent to the newspaper, local radio stations, and television.
- Information was placed on reader boards.
- Print ads were placed in the newspaper.
- Notices were sent to civic organizations, government agencies, and other interested groups. In addition, several people received personal invitations.

However, regardless of this focus on early and ongoing public involvement, much of Benton County is in an uncommon situation due to its proximity to the Hanford Nuclear Site, Columbia Generating Station (CGS), and the Umatilla Chemical Depot (UMCD). For many years now these facilities have occupied the minds and discretionary time of many members of the public, including hundreds of hours of public participation activities related to these facilities to discuss and find solutions for safety concerns. Every day people in Benton County live with the knowledge that an incident at either facility could require emergency response. By comparison, public notices and invitations to meetings to discuss fire hazard mitigation planning activities brought little interest or response from community members. This resulted in Benton County Officials refocusing the public workshop and meetings portion of the public involvement program on public information, education and outreach, while simultaneously inviting public comment and interactions between the public and members of the project team. This approach provided for increasing the exposure of the Benton County hazard mitigation and wildfire planning process, while simultaneously continuing to ask for information and feedback from area residents throughout the development of the Plan. It also proved to be our most successful public involvement tool as it resulted in raising the awareness of citizens throughout the County about the purpose and value of fire hazard mitigation planning, and that the County was undertaking such an effort.

Given the relatively limited time frame that was allotted for developing the Plan in comparison to the community's long history with Hanford, CGS, and UMCD, one of the mitigation action items included in the Plan is to continue to educate the County's citizens about the County's priority and other natural and technological hazards. As awareness continues to increase, so will interest and more people will likely choose to become involved in future updates of the BCHMP and BCWPP.

Benton County Wildfire Protection Plan

Because this strategy was the most effective way to reach the public, each educational and outreach opportunity included a request for information from members of the public about their knowledge pertaining to flooding, windstorms, and wildfires, as well as their feedback about the BCHMP, including potential mitigation strategies.

The categories of activities involving the public were:

- Public notices
- Frequently asked questions
- Benton County Emergency Services Website
- Public presentations
- Newsletters
- City View Cable channel spots
- Booths at Community Events
- Information available at municipal offices and libraries

To further enhance the plan, meetings were held during the initial development of the Benton County Hazard Mitigation Plan (December 4, 2002, April 2, 2003, May 8, 2003). These meetings served to initiate the planning process, identify natural and man-made hazards of concern, and select three hazards – flood, wildfire, and windstorms – as being of particular concern to Benton County.

Hazard plan information was also developed by including local “Stakeholders.”

More than 40 area service providers were invited to a Stakeholders Meeting the morning of May 20 where they received an in-depth briefing about the hazard mitigation planning processes being undertaken in Benton County, had their questions answered, discussed their concerns, and provided the HDR project team with information regarding a series of pre-prepared questions.

Benton County Wildfire Protection Plan

Nineteen stakeholders attended the meeting representing 13 agencies.

1. Badger Mountain Irrigation District
2. Washington Department of Transportation, Yakima
3. Benton Rural Electric Association
4. Benton Public Utility District
5. Benton-Franklin Council of Governments
6. City of Richland
7. Cascade Natural Gas
8. Tri-Cities Visitors and Convention Bureau
9. Richland School District
10. Charter Communications
11. American Red Cross
12. Kadlec Medical Center
13. Benton County Emergency Services

In addition, all of the municipalities of Benton County supported the initiation, development, and implementation of the BCHMP by:

- Writing letters in support of obtaining a hazard mitigation planning grant for Benton County and committing matching funds.
- Providing representation on the Steering Committee.
- Providing representation and/or assistance to the Planning Committee.
- Making staff and resources available for hazard characterization.
- Providing technical assistance throughout the planning process.
- Developing mitigation action items to address priority hazards.
- Assigning priorities to their mitigation action items.
- Assisting in the public involvement process including participating in interviews and providing staff support for public meetings.
- Reviewing drafts of the BCHMP and providing suggested revisions.
- Adopting the BCHMP and recommending it be forwarded to the Washington Military Department, Emergency Management Division, and Federal Emergency Management Agency for approval.

Benton County Wildfire Protection Plan

The BCWPP takes advantage of development activities of the BCHMP, and all the efforts of the builders of the BCHMP. The BCWPP will supplement that plan with specific wildfire hazard mitigation activities.

9.0 Needs and Recommendations for Ongoing Mitigation Activities

9.1 Limiting Fire Occurrences

The following are potential measures to mitigate the hazard posed by wildfires. The list is not definitive – there may be other potential mitigation actions. The potential mitigation measures listed below are not recommended action items for the municipalities of Benton County. Rather, they are included here as examples of the types of mitigation measures other cities and counties have used or considered for similar hazards. The potential mitigation measures have been categorized by the type of mitigation response they represent. Although there are many precautions that can be taken to limit the likelihood of wildfires, it is not feasible to hope to eliminate a naturally occurring hazard. Therefore, mitigation response must focus on limiting the exposure of people and property to the hazard, and limiting the vulnerability of property to the hazard. Types of mitigation response typically include:

Limiting Exposure

- Removing existing development within the area of hazard.
- Restricting future development within the area of hazard.

Limiting Vulnerability

- Providing structural defenses against the impacts of the hazard.
- Providing non-structural defenses against the impacts of the hazard.
- Providing hazard mitigation education to affected communities and the general public.
- Ensuring that plans, procedures, facilities, equipment, and trained personnel are available to provide for adequate hazard response and recovery.

Benton County Wildfire Protection Plan

Based on the information included in the BCHMP and other states' mitigation activities, some effective fire hazard mitigation activities are provided below. Fire prevention activities are often grouped into the three E's (Education, Engineering, and Enforcement). In Benton County there are opportunities for programs in all three of these areas.

- Improved signage and enhanced public awareness of the local conditions.
- Fuel bed manipulation along highways and RR rights-of way
- Better fire cause investigation and record keeping to allow targeting of prevention actions
- Additional building codes that address fire safe landscaping vegetation
- Work with Air Quality people to encourage alternatives to ditch and other open burning
- Start a FIREWISE program in the county to coordinate public education

Existing mitigation activities include current mitigation programs and activities that are being implemented by local, regional, state, or federal agencies or organizations. To further extend mitigation activities, the BCWPP will be used to apply for various grants as Benton County has a considerable risk and limited funding to date.

Grants which can help the county achieve the following specific actions will be sought:

1. Change fire behavior through fuels modifications and reduction efforts.
2. Community education and awareness.
3. Enhanced suppression capability.

These activities are already included in a National Fire Plan Grant application, # 2006-214.

9.2 Local Programs

The cities of Kennewick and Richland maintain municipal fire departments. Most of the remainder of Benton County residents are served by six local fire districts. However, there are some parts of Benton County that have chosen not to participate in the fire districts. These areas have no local fire protection. The two city fire departments and six local fire districts maintain mutual aid agreements, both within Benton County and with fire districts in neighboring counties. State and federal agency fire protection services are available on state and federal lands. State and federal agencies also support local fire response efforts through the auspices of the State Mobilization Plan.

Long-range fire protection needs will require increases in equipment and manpower to maintain an effective level of protection. As Benton County continues to experience

Benton County Wildfire Protection Plan

outward growth from its urban areas, there will be an increased level of service required by residents. This will likely result in a demand for increased full-time personnel as opposed to volunteer service in some of the County's fire protection organizations.

An additional factor is the integration of fire protection needs with long-range water needs. The source, storage capacity, and distribution infrastructure of water systems, as well as fire hydrant placement in higher-density urban developments and interface communities must be adequate to provide sufficient volume and pressure for fire fighting needs.

The fire departments and districts provide essential public services in the communities they serve, and their duties far surpass extinguishing fires. In fact, many of the districts and departments provide other services to their jurisdictions, including Emergency Medical Technicians (EMT) and paramedics who can begin treatment and stabilize sick and injured patients before an ambulance arrives. All of the fire service providers in the County are dedicated to fire prevention, and use their resources to educate the public to reduce the threat of the fire hazard, especially in the wild land/urban interface.

Fire prevention professionals throughout the County provide and will continue many useful and educational services to residents, such as:

- Home fire safety inspection;
- Assistance developing home fire escape plans;
- Business inspections;
- Woodstove installation inspections;
- Free smoke detectors to district residents who qualify;
- Fire extinguisher operation classes;
- Citizen Emergency Response Team training;
- School, church, and civic group fire safety education presentations;
- Fire cause determination;
- Counseling for juvenile fire-setters;
- Teaching fire prevention in schools;
- Conducting CPR classes;
- Teaching proper use of fire extinguishers;
- Coordinating educational programs with other agencies, hospitals, and schools;
- Answering citizens' questions regarding fire hazards.

Benton County Wildfire Protection Plan

9.3 State Programs

EMD provides mitigation for wildfire hazards through the Hazard Mitigation Grant Program. Grant funds are made available on a competitive basis to communities with specific needs identified through the BCWPP.

Washington State Department of Natural Resources (DNR) provides three programs to mitigate wildfires. The Federal Excess Property Program loans used federal fire equipment to eligible Washington Fire Protection Districts. A similar State excess property program loans excess state fire equipment to local agencies. The Washington Wildland Fire Assistance Grant Program is open to all fire districts/departments serving communities less than 10,000 residents and who currently provide a wildland fire response to private, state, or federal ownership.

9.4 Federal Programs

The role of the federal land managing agencies in the wildland /urban interface is reducing fuel hazards on the lands they administer; cooperating in prevention and education programs; providing technical and financial assistance; and developing agreements, partnerships, and relationships with property owners, local protection agencies, states, and other stakeholders in wildland/urban interface areas. These relationships focus on activities before a fire occurs, which render structures and communities safer and better able to survive a fire occurrence.

The federal government has few mechanisms to encourage incentives to resolve the problems in rural, unincorporated areas. There are two programs delivered through the US Forest Service to assist in meeting the needs of rural areas: the Rural Fire Prevention and Control (RFPC) and Rural Community Fire Protection (RCFP). These programs provide cost-share grants to rural fire districts. The annual federal share of these programs has remained relatively stable, totaling approximately \$16 million and \$3 million, respectively. Renewed focus of these programs, emphasizing local solutions, is encouraged.

9.5 Federal Emergency Management Agency (FEMA) Programs

FEMA is directly responsible for providing fire suppression assistance grants and, in certain cases, major disaster assistance and hazard mitigation grants in response to fires. The role of FEMA in the wildland/urban interface is to encourage comprehensive disaster preparedness plans and programs, increase the capability of state and local governments, and provide for a greater understanding of FEMA's programs at the federal, state, and local levels.

Benton County Wildfire Protection Plan

9.6 Fire Suppression Assistance Grants

Fire Suppression Assistance Grants may be provided to a state with an approved hazard mitigation plan for the suppression of a forest or grassland fire that threatens to become a major disaster on public or private lands. These grants are provided to protect life and improved property, and encourage the development and implementation of viable multi-hazard mitigation measures, and provide training to clarify FEMA's programs. The grant may include funds for equipment, supplies, and personnel. A Fire Suppression Assistance Grant is the form of assistance most often provided by FEMA to a state for a fire. The grants are cost-shared with states. FEMA's U.S. Fire Administration (USFA) provides public education materials addressing wildland/urban interface issues, and the USFA's National Fire Academy provides training programs.

9.7 National Wildland/Urban Interface Fire Protection Program

Federal agencies can use the National Wildland/Urban Interface Fire Protection Program to focus on wildland/urban interface fire protection issues and actions. The Western Governors' Association (WGA) can act as a catalyst to involve state agencies, as well as local and private stakeholders, with the objective of developing an implementation plan to achieve a uniform, integrated national approach to hazard and risk assessment and fire prevention and protection in the wildland/urban interface. The program helps states develop viable and comprehensive wildland fire mitigation plans and performance-based partnerships.

10.0 Review/Approval/Concurrence

According to the Preparing a Community Wildfire Protection Plan: A handbook for Wildland-Urban interface communities, March 2004, the HFRA requires that the following three entities must mutually agree to the final contents of the Plan:

1. The applicable local governments (i.e., counties or cities)
2. The local fire departments; and
3. The state and/or federal entity responsible for forest management.

The final step before signature of the plan is for the Core Team to reconvene and mutually agree on the fuels treatment priorities, preferred methods for fuels treatment projects, the location of the WUIs, structural ignitability recommendations and other information, and actions to be contained in the final document.

Benton County Wildfire Protection Plan

The Core Team members are listed below:

- Benton County Board of Commissioners
- City of Kennewick
- City of West Richland
- City of Prosser
- City of Benton City
- Benton County Fire District 1
- Benton County Fire District 2
- Benton County Fire District 3
- Benton County Fire District 4
- Benton County Fire District 5
- Benton County Fire District 6
- BCES Executive Board
- Benton County Noxious Weed Board
- United States Fish and Wildlife, Hanford Reach National Monument
- Bureau of Land Management, Spokane District Office
- Department of Energy, Richland
- United States Fish and Wildlife Service, McNary National Wildlife Refuge
- Washington State Fish and Wildlife Service, McNary National Wildlife Refuge

After the collaboratively designed plan has been developed, a strategy for communicating the results of the plan to community members and key land management partners in a timely fashion should be developed.

Benton County Wildfire Protection Plan

Bibliography

Benton County Comprehensive Emergency Management Plan, Draft Rev.1. Emergency Support Function (ESF) 4, Firefighting

Interagency Fire Team, U.S. Fish and Wildlife Service, Region One, Portland Oregon.
24 Command Fire, A national level review by the Interagency Fire Team.
September 2004

U.S. Department of Energy, Richland Operations Office, *Type B Accident Investigation - Response to the 24 Command Wildland Fire on the Hanford Site; June 27th - July 1, 2000*, October, 2000

24 Command Corrective Actions, March 7, 2002 revision

Giesa, J.B., *The Benton County Wildfire Protection Plan – Requirements Document*, January 2005

Mitigation Plan page 4-31 for City Codes

Tri-County Mutual Aid Agreement, February 5, 1998

Preparing a Community Wildfire Protection Plan: A handbook for Wildland-Urban interface communities, March 2004

Benitz, Honorable Max (Executive Board Chairman, Benton County) *RE: The Benton County Wildfire Protection Plan*, October 18, 2004.”

Tri-County Fire Mutual Aid Agreement, May 1998. Attachment 1, Agency Radio Identifiers; Attachment 2, Equipment and Facility Standards; Attachment 3, Pre-Determined Out of Area Strike Teams/Leaders; Attachment 4, Apparatus Inventory; and Attachment 5 Communications Inventory.)

Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities, March 2004, October 2004.

National Fire Protection Act. (NFPA 1144), *Standard for Protection of Life and Property from Wildfire*